

CLAIMS:

1. A signal for transmitting symbols on a set of at least three parallel channels, the signal comprising for each symbol an active signal on each of two of those channels and an inactive signal on the remaining channel or channels, the symbols being distinguishable by which two of the channels have the active signals.
2. A signal as claimed in claim 2 wherein the two active signals are of different form allowing them to be distinguished from each other, the symbols being further distinguishable thereby.
3. A signal as claimed in claim 2 wherein one of the active signals is an electrical signal at a first voltage level and the other is an electrical signal at a second voltage level.
4. A signal as claimed in claim 3 wherein the inactive signal or signals is an electrical signal at a voltage level intermediate to the first and second voltage levels.
5. A signal as claimed in claim 4 wherein the inactive signal is at a voltage level substantially half-way between the first and second voltage levels.
6. A signal as claimed in claim 2 wherein one of the active signals is provided as a current of a first sense and the other active signal as a current of a second sense, the first and second sense being opposite to each other.
7. A signal as claimed in claim 6 wherein the inactive signal has a current that is substantially zero.

8. An encoder for transmitting data symbols from a set of at least three terminals, the encoder being arranged to provide for each of the symbols an active signal on two of the terminals of the set while providing an inactive signal on
5 the remaining terminal or terminals of the set.

9. An encoder as claimed in claim 8 wherein the encoder is arranged to provide the two active signals in different form allowing them to be distinguished from each other.

10

10. An encoder as claimed in claim 9 arranged to provide one of the active signals as an electrical signal at a first voltage level and the other active signal as an electrical signal at a second different voltage level.

15

11. An encoder as claimed in claim 10 arranged to provide the inactive signal or signals as an electrical signal at a voltage level intermediate to the first and second voltage levels of the active signals.

20

12. An encoder as claimed in claim 11 wherein the inactive signal is at a voltage level substantially half-way between the first and second voltage levels.

25 13. An encoder as claimed in claim 9 arranged to provide one of the active signals as current of a first sense and the other active signal as a current of a second sense, the first and second senses being opposite to one another.

30 14. An encoder as claimed in claim 13 wherein the inactive signal or signals are provided by not actively providing a current signal on the remaining terminal or terminals.

FOIA b 7 - D

15. An encoder as claimed in any one of claims 9 to 14 comprising first and second sets of switches, one switch from each of the first and second sets being connected to a respective one of the terminals, the encoder being arranged
5 to activate a selected one of the first set of switches in order to provide one of the active signals on the terminal to which that switch is connected and the encoder arranged to activate a selected one of the second set of switches in order to provide the other active signal on a terminal to
10 which that switch is connected.

16. An encoder as claimed in claim 15 wherein the remaining switches are inactive in order to provide an inactive signal on the or each remaining terminal.

15

17. An encoder as claimed in claim 15 or claim 16 wherein each switch in the first set of switches is coupled to a first voltage level and each switch in the second set of switches is coupled to a second voltage level.

20

18. An encoder as claimed in claim 15 or claim 16 wherein each switch in the first set of switches is coupled to a first current source and each switch in the second set of switches is coupled to a second current source.

25

19. An encoder as claimed in any one of claims 15 to 18 wherein each terminal of the encoder is coupled, via a resistor, to a common node.

30 20. An encoder as claimed in claim 19 wherein the common node is at a/the voltage level intermediate to the voltage levels on the terminals carrying the first and second active signals.

21. A decoder for receiving data symbols presented at a set of at least three terminals, the decoder being arranged to detect which two of the terminals have an active signal and to identify in response which symbol is being received.

5

22. A decoder as claimed in claim 21 wherein the decoder is further arranged to detect which of the two active signals is of a first form and which is of a second form, and to use that information in said identification of the symbol

10 received.

23. A decoder as claimed in claim 22 arranged to detect which of said terminals is at a first active voltage level and which of said terminals is at a second active voltage, that
15 information being used in said identification of the symbol received.

24. A decoder as claimed in claim 23 arranged to compare the voltage levels on the terminals with a reference voltage.

20

25. A decoder as claimed in claim 24 comprising:

- a first receiver sub-circuit;
- a second receiver sub-circuit;
- a data decoder;

25 a data output,

wherein:

the first receiver sub-circuit has a respective switching element for each of the said terminals controlled by the signal on that terminal providing a respective output,
30 each output of the first receiver sub-circuit indicating when the terminal controlling the switching element is at a first voltage level;

the second receiver sub-circuit has a respective switching element for each of the said terminals controlled

by the signal on that terminal providing a respective output, each output of the second receiver sub-circuit indicating when the terminal controlling the switching element is at a second voltage level; and

5 the output of the first and second receiver sub-circuits are coupled to inputs of the data decoder, the data decoder is arranged to determine the data symbol transmitted in response to which outputs of the first and second receiver sub-circuits indicate the presence of the first and second
10 voltage levels and to indicate that data symbol at the data output.

26. A decoder as claimed in claim 23 arranged to detect said first and second active voltage levels by comparing voltage
15 levels on the terminals with each other, the terminal with the first active voltage level being identified as the one with the highest voltage and the terminal with the second active voltage level being identified as the one with the lowest voltage.

20
27. A decoder as claimed in claim 22 arranged to detect which of the terminals is receiving a current in a first sense and which is receiving a current in the opposite sense, that information being used in said identification of the symbol
25 received.

28. A system comprising an encoder as claimed in any one of claims 8 to 20 and a decoder as claimed in any one of claims 21 to 27 as appropriate.

30
29. A method of transmitting data comprising encoding it as a series of symbols using the signal claimed in any one of claims 1 to 7.

09459409401
1042607461660